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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joseph M. Brand

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PERKINS COIE LLP

PATENT-SEA

P.O. BOX 1247

SEATTLE, WA 98111-1247

EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/639,917

Applicant(s)

BRAND, JOSEPH M.

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9,32-36 and 64-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-9,32,34-36,64-69,71-74 and 76-80 is/are rejected.
- 7) ☐ Claim(s) 33,70,75,81 and 82 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to applicant's election filed July 5, 2005. The indicated allowability of claims 32, 34-36 is withdrawn in view of the newly discovered reference. Rejections based on the newly cited reference(s) follow.

Election

2. Applicant's election without traverse of Species A2, Subspecies 2 in the reply filed on July 5, 2005 is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 2, 3, 7 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Lowry (U.S. 6,335,208).

5. Lowry (Fig 1, 2) discloses:

(cl. 2, 3, 7) a method for packaging a microelectronic substrate (understood to mean a chip) comprising: disposing encapsulation material (24) in direct contact with a surface of the microelectronic substrate (computer shuts down when contacts IC; Col. 2, Lines

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9-21) and exposing at least a portion of the surface of the microelectronic substrate by removing a portion of the encapsulating material ("LASER") in direct contact with the microelectronic substrate with the microelectronic substrate in operable condition after the portion of the encapsulating material is removed (i.e. see if meets specification; Col. 1, Lines 26-30) wherein removing includes directing laser radiation toward the encapsulating material (Fig. 2);

(cont. cl. 3) wherein IC has a first and second surface opposite a first surface and facing away from a support (4).

(cl. 9) wherein the encapsulating material is sequentially removed (i.e. start from top surface and then go deeper into surface resulting in the sequential removal of material).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry (U.S. 6,335,208).

8. Lowry discloses the elements stated in paragraph 5 of this office action and power (watts) by its use of a laser, but does not appear to disclose how much power is used.

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9. With respect to the laser having a power from 4 to 25 watts, it would have been obvious to one ordinary skill in the art to have a laser at 4 to 25 watts, since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

10. Claim 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry et al. (U.S. 6,335,208) in combination with Kojima et al. (U.S. 5,723,900)

11. Lowry discloses the elements stated in paragraph 5, but does not show a memory chip or heat dissipation.

12. Kojima (Fig 8) teaches a memory chip (Col. 6, Line 10) and transferring heat by transmitting it directly away from the exposed portion of the surface of the microelectronic substrate and therefore by convection; mounting the microelectronic substrate to a printed circuit board (29; Col. 5, Line 62).

13. It would have been obvious to one of ordinary skill in the art to incorporate a memory chip in the structure of Lowry in order to provide a an integrated chip as required by Lowry (Col. 1, Lines 5, 49) and to form a heat sink on the back surface of Capote in order to improve heat radiation as taught by Kojima (Col. 5-6, Lines 66-2).

14. Claims 2, 3, 7-9, 32, 34-36, 64-69, 71-74 and 76-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolken et al. (U.S.2002/0173070) combination with Lowry et al. (U.S. 6,335,208).

15. Bolken (1B, 7) discloses:

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(cl. 2, 3, 32, 64, 65) a method for packaging a microelectronic substrate, the method comprising mounting the microelectronic substrate (20) to a dielectric support member (10; Par. 0046) with a first surface of the microelectronic substrate facing the dielectric support member and a second surface of the microelectronic substrate facing opposite the first surface with bond sites (26), electrically coupling the microelectronic substrate to the dielectric support member by passing wire (24) bonds through an aperture in the support member and connecting one end of each wire bond to the support member and an opposite end of each wire bond to the microelectronic substrate (12), disposing an encapsulating material (Par. 0056) over the second surface of the microelectronic substrate and at least a portion of the support member,

(cont. cl. 65) a first portion of the encapsulating material projects from the surface of the support member (i.e. substrate covered with encapsulant shown; Fig. 7).

16. Bolken does not appear to disclose removal of its encapsulation exposing a second surface by laser, or attaching a heat dissipation member.

17. Lowry (Fig2) teaches removal of encapsulation by laser by removing a first portion and second portion under the first encapsulant portion (i.e. laser starts from top surface and then goes deeper into surface resulting in the sequential removal of material).

18. It would have been obvious to one of ordinary skill in the art to incorporate to incorporate the process of removing portions of the encapsulation of Bolken and to expose a second surface of its chip in order to monitor the manufacturing process as taught by Lowry (Col. 1, Lined 24-30).

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19. With respect to the thickness removed in claims 69 and 74, applicant has not disclosed that it is for a particular unobvious purpose.

20. As such, the limitation is obvious since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

21. With respect to the wattage of claims 37, 67 see paragraph 9 of this office action.

22. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bolken et al. (U.S.2002/0173070) and Lowry et al. (U.S. 6,335,208) as applied to claim 7 and further in combination with Kojima et al. (U.S. 5,723,900)

23. Neither Bolken nor Lowry appear to show a memory chip.

24. Kojima (Fig 8) teaches a memory chip.

25. It would have been obvious to one of ordinary skill in the art to incorporate a memory chip in the structure of Lowry in order to provide an integrated chip as required by Bolken (Par. 0005).

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26. Claim 64-65, 69, 74, 76, 78, 79, 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolken et al. (U.S.2002/0173070) combination with Kojima et al. (U.S. 5,723,900).

27. Bolken (1B, 7) discloses:

(cl. 64, 65) a method for packaging a microelectronic substrate, the method comprising mounting the microelectronic substrate (20) to a dielectric support member (10; Par. 0046) with a first surface of the microelectronic substrate facing the dielectric support member and a second surface of the microelectronic substrate facing opposite the first surface with bond sites (26), electrically coupling the microelectronic substrate to the dielectric support member by passing wire (24) bonds through an aperture in the support member and connecting one end of each wire bond to the support member and an opposite end of each wire bond to the microelectronic substrate (12), disposing an encapsulating material (Par. 0056) over the second surface of the microelectronic substrate and at least a portion of the support member,

(cont. cl. 65) a first portion of the encapsulating material projects from the surface of the support member (i.e. substrate covered with encapsulant shown; Fig. 7).

28. Bolken does not appear to disclose removal of its encapsulation exposing a second surface or attaching heat dissipation.

29. Kojima (Fig 4J,I, 8) teaches removal of encapsulation and exposure of a second surface of its chip and transferring heat by transmitting it directly away from the exposed portion of the surface of the microelectronic substrate and therefore by convection.

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30. It would have been obvious to one of ordinary skill in the art to incorporate to incorporate the process of removing portions of the encapsulation of Bolken and to expose a second surface of its chip in order to attach a heat sink in order to improve heat radiation as taught by Kojima (Col. 5-6, Lines 66-2).

31. With respect to the thickness removed in claims 69 and 74, applicant has not disclosed that it is for a particular unobvious purpose.

32. As such, the limitation is obvious since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Allowable Subject Matter

33. Claims 33, 70, 75, 81 and 82 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

34. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious forming heat transfer members from encapsulant by removing portions of encapsulant with a laser, or forming heat

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transfer members from the encapsulant by removing portions of the encapsulant including all the limitations of the independent claim.

Response to Arguments

35. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses in Lim (U.S. 5,925,934) and Miks (U.S. 2003/0080440) a laser used remove encapsulant from a chip and in Juskey (U.S. 5,371,404) heat sinks integral with encapsulant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
October 3, 2005


MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER